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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,312	08/27/2003	Yoshiki Kida	242045US90CONT	4871
22850	7590	05/03/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			FULLER, RODNEY EVAN	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,312

Applicant(s)

KIDA ET AL.

Examiner

Rodney E Fuller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 14-29 and 46-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 30-45 is/are rejected.
- 7) ☒ Claim(s) 1-13 and 30-45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 14-29 and 46-57 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper titled "Response to Restriction Requirement" dated February 23, 2004.

Claim Objections

2. Claims 1-13 and 30-45 are objected to because of the following:
 - a. The limitation "the image field containing an area on a substrate exposed in one shot by a scanning exposure in a scanning exposure apparatus different from said exposure apparatus, that synchronously moves a mask and the substrate for the scanning exposure" is unclear. Further, the area exposed by the scanning exposure apparatus is not defined other than being different from the stationary exposure apparatus. Thus, the predetermined size and shape of the image field has not been limited.
 - b. Claims 2-13 and 30-45 depend from claim 1 and therefore include the deficiencies of claim 1.Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 13, and 41-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi, et al. (US 6,002,467).

Regarding claims 1, Nishi discloses “a projection optical system (Fig. 1, ref.# PL) having an image with a predetermined size and shape (Fig. 1, ref.# 47), the image field containing an area on a substrate exposed in one shot by a scanning exposure in a scanning exposure apparatus different from said exposure apparatus, that synchronously moves a mask pattern and the substrate for the scanning exposure; a masking device (Fig. 1, ref.# 35A, 35B) of which a blade is disposed in an optical path through which said energy beam passes to define a region (column 22, lines 55-56) in the image field on which a pattern image of said mask (Fig. 1, ref.# R) illuminated with said energy beam is projected by said projection optical system so that said area can be exposed in one shot with said energy beam from said mask through said projection optical system in said stationary state; and a substrate stage (Fig. 1, ref.# 48) on which said substrate is mounted.

The method step of claims 13 and 41-45 is met by the operation of Nishi as applied to claim 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-7, 33-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi (US 6,002,467).

Regarding claims 2-5, 37-40 Nishi discloses wherein the area exposed has rectangular shape (column 2, line 51) and wherein the projection magnification of $\frac{1}{4}$ or $\frac{1}{5}$ (column 23, line 29). However, Nishi does not specifically disclose the mask is 6 inches in size. However the specific sizes of the mask depend on the desired chip size. That is, it is a matter of design choice what size area to produce or what size mask to use. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide area sizes or mask size as claimed in the apparatus of Nishi to obtain the desired end chip size

Regarding claims 6, 33 and 36, since the image field is large enough for the scanning area, the image field inherently has a length or diameter in which the divided area is almost inscribed. Nishi does not specifically disclose the image field as being circular. However, choosing the particular shape is a matter of design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a circular image field shape in the apparatus of Nishi to more easily provide lenses for the projection optical system.

Regarding claims 7, 34 and 35, Nishi does not specifically disclose the resolution of the projection optical system. However, projection optical systems with varying resolutions are well known. It is a simple matter of design choice which resolution to choose. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide

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a projection optical system with a line resolution of .35 microns in the apparatus of Nishi to match the mask line width and to produce better and finer circuit patterns as desired.

7. Claims 8, 9, 12, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi in view of Muraki (US 6,166,387).

Regarding claims 8, 9 and 30, Nishi discloses a control system (Fig. 1, ref.# 19). Nishi does not specifically disclose changing a control factor in accordance with a minimum line width of a pattern. Muraki teaches (column 18, lines 46-64) changing a source image in accordance with a minimum line width of a pattern which minimizes moving steps. Thus, Muraki recognizes that the device has to adapt to the minimum line width of the pattern. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to change a control factor or initiate an on/off automatic focusing alignment measurement in the apparatus to adapt to different line widths and improve the exposure.

Regarding claim 12, Nishi and Muraki do not specifically disclose the thresholds at which the control factor is changed as claimed. However, choosing a threshold to change a control factor is a matter of design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to change a control factor in two stages at the thresholds claimed in the apparatus of Nishi to implement finer control as desired.

8. Claims 8-10 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi in view of Ota (US 5,506,684).

Regarding claims 8-10 and 30-32, Nishi does not specifically disclose changing a control factor or a permissible value of the physical quantity related to a position setting accuracy as claimed. Ota teaches (column 10, lines 26-33) changing a control factor or changing a permissible valued (threshold) of a physical quantity related to a position setting accuracy (rotational error) in an exposure device in accordance with the minimum line width. Thus, Ota recognizes that more accurate exposure is achieved by changing a threshold in accordance with the minimum line width. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such a change in position setting target value in the apparatus of Nishi to improve accuracy and exposure.

Allowable Subject Matter

9. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome the claim objection of claim 1 and in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: an exposure apparatus as claimed, more specifically in combination with: changing a control factor including a physical quantity related to an alignment measurement accuracy includes a quantity of selecting alignment marks is not disclosed or made obvious by the prior art of record.

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Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney E Fuller whose telephone number is 571-272-2118. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 571-272-2112. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rodney E Fuller
Primary Examiner
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April 28, 2004